

REMARKS

This Amendment, in connection with the following remarks, are submitted as fully responsive to the Office Action. Claims 1, 22, 26 and 27 have been amended. Claims 1, 22 and 26 are the independent claims. Favorable reconsideration is requested.

Claims 1-9, 11-18 and 20-26 stand rejected under 35 U.S.C. §102 as being anticipated by U.S. Patent No. 5,588,098 to Chen et al. ("Chen"). Claim 10 stands rejected under 35 U.S.C. §103(a) as being unpatentable over Chen in view of U.S. Patent No. 6,826,297 to Sato ("Sato"). Claims 26-27 were indicated as being allowable if rewritten.

The method of claim 1, as amended, is directed to the interactive presentation of 3D models in a 3D data display. The method includes displaying data in a 3D data set in an overview mode where localization markers can be set, deleted, manipulated and viewed, and displaying data in a local mode where data in an interest region surrounding a localization marker are rendered using different display parameters than those of the overview mode. The localization markers can be set, deleted and manipulated by a user at any point within the 3D data set.

As described in the specification, when interacting with a 3D data set or model it is often useful or desired to pay attention to a particular smaller region within the model space, wherein one or more of the models displayed therein have significant features. *Specification* at ¶ 6. When interactively visualizing such smaller regions it is often desired to display them with different display properties than those utilized in the standard viewing mode, such as, for example, higher magnification, greater resolution, shading effects, etc. *Specification* at ¶6. In

general these different display properties consume a greater amount of system resources and it is not effective to apply them to all points in the model space. *Id.*

To facilitate this desirable feature the present invention allows a user to interactively set, delete and manipulate one or more localization markers at any point in the model space. This allows a user to view a large model, such as, for example, of a colon or other anatomical region generally and look for points or regions of interest (“overview mode”). After a set of such points or regions of interest has been obtained, the user can return to each of them and analyze them in greater detail, using different, and generally more detailed, display parameters (“local mode”). *Specification* at ¶27. This is exactly how medical practitioners examine volumized medical scan data, such as, for example, a CT of a colon, a combined CT/MR of a brain, ultrasound of a liver, etc. First, a first pass is performed as a global or overall view and sites of interest are noted and recorded. Second, each site of interest is examined in detail, for tumors or other abnormalities requiring diagnosis or evaluation.

If a user was required to reset the local mode display parameters each time she moved to a new site of interest, this would not only be time consuming and tedious, but would tend to frustrate the user. Thus the present invention allows a user to store a set of sites of interest and associated sets of display parameters for each. When the user returns to a given site of interest it automatically displays as she so desires.

Chen is directed to a method and apparatus for manipulating 3D objects on a computer display. Chen does not teach or suggest the method of amended claim 1, however. In fact, Chen squarely teaches away from it. In Chen the objects to be manipulated are defined *a priori*. Moreover, each such predefined object has an associated fixed and also predefined

bounding box. Throughout Chen the objects and their associated bounding boxes are never user defined or even modifiable. Each bounding box has a set of “sensitive areas” or “active zones” which can be selected and used to manipulate the object within the bounding box, as shown in Fig. 4. There is no teaching in Chen that allows a user to interactively set or modify the bounding box or the “sensitive areas” at each of its corners as the user interactively views the data.

Moreover, because the bounding boxes are known *a priori* and are associated with each object in the data set, such as, for example, the chair of Fig. 3, a user cannot decide for herself what the areas of interest are as she views the data set as a whole. The system has already provided the objects and the means to manipulate them. A user in Chen cannot designate one or more portions of an object as a new region of interest, and then associate new bounding boxes with them on the fly. For example, a user cannot designate just the seat of the chair in Fig. 3 as a new object that will be displayed with different user defined parameters when a cursor is within so many voxels of a marker placed by the user somewhere on that chair seat as can be done in the present invention. This restriction is unacceptable in any medical imaging application, where *etiology* determines what is viewed in greater detail, not an *a priori* decision by the system or programmer as to (i) what the size and expanse of a given *a priori* “object” is, and (ii) how that object can be displayed using pre-defined active zones at the edges of a pre-defined bounding box surrounding such fixed object. This restriction is also not what is recited in claim 1, as amended. Claim 1 recites that the *user* can *set, delete, manipulate* and view localization markers in an overview mode, and that this can be done at any point in the 3D data set.

For at least these reasons, claim 1 is respectfully asserted as patentable over Chen. For similar reasons independent claims 22 and 26, which recite similar features, are also urged as patentable over Chen.

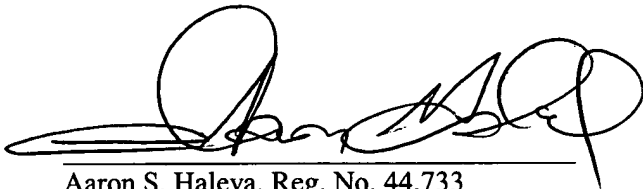
Neither Sato nor Yamada is seen by Applicants as curing the defects of Chen as a reference against the independent claims, whether taken alone or in combination. Thus, dependent claims 2-21, 23-25 and 27-28 are also urged as patentable over Chen, Sato and Yamada, whether alone or in any combination.

If any questions remain as to the patentability of the pending claims, Applicants respectfully request the opportunity to have an interview with the Examiner, review same, and present their point of view. The Examiner is thus invited to notify Applicants' undersigned attorney if such questions remain so that an interview can be scheduled.

No additional fees are believed due herewith. If any additional fees are due, the Commissioner is hereby authorized to charge any fee deemed necessary for the entry of this Amendment to Deposit Account No. 50-0540.

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Respectfully submitted,

A handwritten signature in black ink, appearing to read 'Aaron S. Haleva', is written over a horizontal line.

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